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Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv)) for US only*

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
17 February 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PLASTID TRANSFORMATION

(57) Abstract: The present invention relates to the field of plastid transformation. The invention provides transformation vectors and methods to obtain transplastomic plants or algae having a transformed plastid comprising the steps of introducing into plastids a recombinant nucleic acid molecule or vector, and two phases of selection with first selection phase using a nonlethal compound and a second selection phase using a lethal compound. Alternatively, the dual selection method is conducted simultaneously using a lower concentration of the lethal compound.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/31941

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : C12N 15/82
US CL : 800/278; 435/320.1
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 800/278; 435/320.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/0042934 A1 (STAUB et al.) 11 April 2002 (11.04.2002), see entire document.	1-12, 14-28 and 31-32
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Y		13, 29-30 and 33-36
Y	WO 01/68826 A1 (SYNGENTA PARTICIPATIONS AG) 20 September 2001 (20.09.2001), see pg 56, 67-75 and 96-105.	13 and 33-36
Y	KINDLE et al. Engineering the chloroplast genome: Techniques and capabilities for chloroplast transformation in Chlamydomonas reinhardtii. Proc. Natl. Acad. Sci. USA. March 1991, Vol. 88, pages 1721-1725, see entire document.	29-30

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
04 August 2004 (04.08.2004)

Date of mailing of the international search report
15 DEC 2004

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INTERNATIONAL SEARCH REPORT

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Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

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BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions that are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-28 and 31-36, drawn to a method for obtaining a transplastomic plant and a plastid transformation vector.

Group II, claim(s) 29-30, drawn to a method for obtaining a chloroplast-transformed algae.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: They fail to share a special technical feature.

The technical feature linking the groups is a method for chloroplast transformation via use of rounds of resistance to non-lethal, then lethal selective compounds. This technical feature is taught by STAUB et al (US 2002/0042934 A1, 11 April 2002; see ¶115-138), which teaches the method of claim 1, thus rendering it, among others not novel. Therefore, the technical feature linking Groups I-II is not special and the Groups are not so linked under PCR Rule 13.1.

Continuation of B. FIELDS SEARCHED Item 3:
Agricola, Biosis, Caplus, CABA, Embase, USPAT, EPO, JPO, US Pub, Derwent
Search terms: